

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1.(Currently Amended) A method for the separation of a carbon nanotube-nucleic acid complex comprising on the basis of diameter :
 - a) providing a carbon nanotube-nucleic acid complex in solution comprising an unfunctionalized carbon nanotube bound to a nucleic acid molecule wherein the solution comprises a densifying agent ;
 - b) loading the carbon nanotube-nucleic acid complex solution of step (a) on to an electrophoresis gel; and
 - c) separating the loaded complexes of (b) by applying an electric field to the gel, whereby the carbon nanotube-nucleic acid complex is separated on the basis of the diameter of the carbon nanotube .
2. (Original) A method according to Claim 1 wherein the electrophoresis gel is comprised of materials selected from the group consisting of agarose and acrylamide.
- 3.(Original) A method according to Claim 1 wherein the densifying agent is selected from the group consisting of glycerol, sucrose, and Ficoll
4. (Withdrawn)A method for the separation of a carbon nanotube-nucleic acid complex comprising:
 - a) providing a carbon nanotube-nucleic acid complex in and aqueous solution comprising an unfunctionalized carbon nanotube bound to a nucleic acid molecule;
 - b) adding a substantially water-miscible organic solvent to the dissolved complexes of (a) whereby a certain size fraction of the complexes are precipitated; and
 - c) collecting the complex precipitate of step (b).
- 5.(Withdrawn) A method according to Claim 4 wherein the substantially water-miscible organic solvent is selected from the group consisting of methanol, ethanol, isopropanol, dimethyl sulfoxide, tetrahydrofuran, dimethylformamide, dioxane, and acetone.
- 6.(Withdrawn) A method for the separation of a carbon nanotube-nucleic acid complex comprising:

- a) providing a carbon nanotube-nucleic acid complex in an aqueous solution comprising an unfunctionalized carbon nanotube bound to a nucleic acid molecule wherein the nucleic acid portion of said complex is comprised of at least 50% hydrophobic nucleotides;
- b) applying the solution of (a) to an ion exchange media wherein the carbon nanotube-nucleic acid complex becomes associated with the ion exchange media; and
- c) eluting the carbon nanotube-nucleic acid complex from the ion exchange media into discreet fractions.

7. (Withdrawn) A method according to Claim 6 wherein the ion exchange media is selected from the group consisting of choestyramine, diethyaminoethyl cellulose, diethyaminoethyl sephadex, diethyaminoethyl sepharose resins, cellulose phosphate, CM cellulose, CM sephadex and dowex resins.

8.(Withdrawn) A method according to Claim 6 wherein the nucleic acid portion of said complex is from about 5 to about 100 bases in length.

9.(Withdrawn) A method according to Claim 6 wherein the nucleic acid portion of said complex is at least 50% guanine.

10.(Withdrawn) A method according to Claim 6 wherein the nucleic acid portion of said complex is defined by the general formula (G/T) n wherein $n=5-50$.

11. (Currently Amended) A method according to ~~any of Claims 1, 4 and 6~~ Claim 1 Wherein the nucleic acid molecules are selected from the group consisting of; single stranded DNA, double stranded DNA, RNA and PNA.

12.(Currently Amended) A method according to ~~either of Claims 1 and 4~~ Claim 1 wherein the nucleic acid is from about 10 bases to about 1000 bases in length.

13.(Currently Amended) A method according to ~~any of Claims 1, 4 and 6~~ Claim 1 wherein the nucleic acid molecule is selected from the group consisting of:

- a. An wherein $n = 1 - 2000$;
- b. T n wherein $n = 1 - 2000$;
- c. C n wherein $n = 1 - 2000$;
- d. G n wherein $n = 1 - 2000$;
- e. R n wherein $n = 1-2000$, and wherein R may be either A or G;
- f. Y n wherein $n = 1 - 2000$, and wherein Y may be either C or T;
- g. M n wherein $n = 1 - 2000$, and wherein M may be either A or C;
- h. K n wherein $n = 1 - 2000$, and wherein K may be either G or T;
- i. S n wherein $n = 1 - 2000$, and wherein S may be either C or G;

- j. Wn wherein n = 1 - 2000, and wherein W may be either A or T;
- k. Hn wherein n = 1 - 2000, and wherein H may be either A or C or T;
- l. Bn wherein n = 1 - 2000, and wherein B may be either C or G or T;
- m. Vn wherein n = 1 - 2000, and wherein V may be either A or C or G;
- n. Dn wherein n = 1 - 2000, and wherein D may be either A or G or T; and
- o. Nn wherein n = 1 - 2000, and wherein N may be either A or C or T or G.

14.(Currently Amended) A population of carbon nanotubes separated by the method of ~~any one of~~ Claims 1, 4 and 6.

15.(Original) The population of carbon nanotubes according to Claim 14 having a uniform diameter.

16 – 18 (Canceled) .

19.(Original) The population of nanotubes according to Claim 14 wherein the nanotubes are metallized.